REMARKS

In the Office Action, the Examiner rejected Claims 1-5, 7-10 and 13-15, which are all of the pending claims, under 35 U.S.C. §102 as being fully anticipated by U.S. Patent 5,917,873 (Shiomoto, et al.). The Examiner also objected to language used in Claims 1, 2, 4, 5, 8-10, 14 and 15.

The previous rejection of the claims under 35 U.S.C. 112, first paragraph, on the grounds that the specification is not enabling, was withdrawn.

The rejection of the claims over the prior art is respectfully traversed. Independent Claims 1, 3, 7 and 13 are being amended to better define the subject matters of these claims. Claims 2, 4, 5, 8-10, 14 and 15 are being amended to address objections of the Examiner. New Claims 16 and 17, which is dependent from Claim 1, are being added to describe features of an embodiment of the invention.

It is believed that the changes to the claims fully address the Examiner's objections to the claims. For example, the Examiner commented that the last subparagraph of Claim 1 should be headed by "ii)". In order to use formatting consistently in Claim 1, the claim is being amended to remove the "i)" from the penultimate subparagraph of claim 1.

Also, dependent Claims 2, 4, 5 and 8-10 are being amended, in accordance with the Examiner's request, to change "A method" to "The method." Similarly, Claims 14 and 15, which are dependent from Claim 13, are being amended to change "A system" to "The system."

In view of the above-discussed changes, the Examiner is respectfully requested to reconsider and to withdraw the objections to Claims 1, 2, 4, 5, 8-10, 14 and 15.

Moreover, for the reasons advanced below, Claims 1-5, 7-10 and 13-17 patentably distinguish over the prior art and are allowable. The Examiner is thus also asked to reconsider

and to withdraw the rejection of Claims 1-5, 7-10 and 13-15 under 35 U.S.C. §102 and to allow these claims and new Claims 16 and 17.

Generally, Claims 1-5, 7-10 and 13-17 patentably distinguish over the prior art because the prior art does not disclose or render obvious using both hardware and software, at different times, to adjust a local clock frequency to reduce the difference between the local clock and a program clock, as described in Claims 1, 3, 7 and 13.

In order to best understand this feature and its significance, it may be helpful to review briefly the present invention and the prior art.

Applicant's invention, generally, relates to synchronizing the frequency of a local clock of a digital data decoder with the frequency of a program clock. As discussed in detail in the present application, in situations where multiplexed data are transmitted to a decoder, the frequency of the program clock and the frequency of the local clock on the decoder need to be kept reasonably close together in order to properly demultiplex the data.

Procedures are known for doing this. In many prior art procedures, processing and filtering the timing signals consumes significant processor resources. This is because the clock signals may be in mixed number bases, the clock signals can arrive at widely varying times, and there is no way to sort out necessary interrupts form unnecessary interrupts.

Furthermore, maintaining the proper demultiplexing of the data is important. For example, when the data comprises a mix of video and audio data for the same program, if the data are not properly demultiplexed, errors that are directly visible or audible may result.

The present invention effectively addresses this issue. Generally, this is done by providing an effective clock recovery mechanism with reduced demand on the processor. More specifically, in accordance with Applicant's invention, under some circumstances, the

frequencies of the two clocks are brought together using hardware, and in other circumstances, software, executing on the processor, is used to bring these two frequencies closer together. Figure 7 of the application illustrates one embodiment of the hardware that may be used, and Figure 9 of the application illustrates a software procedure that may be used.

With the procedure of Applicant's invention, the processor is only called upon under specific conditions to address the frequency difference between the program and the local clocks.

The prior art does not disclose or render obvious using both hardware and software, as described above, to adjust the local clock frequency.

Shiomoto, et al. discloses digital PLL circuit for adjusting the frequency of a decoder clock to keep that clock synchronous with the encoder clock. With the digital circuit disclosed in Shiomoto, et al., a time reference value from the encoder clock is compared to the value of the decoder clock. This difference is used to adjust a variable controlled oscillator to reduce the difference between the frequencies of the encoder and decoder clocks.

Shiomoto, et al, though, does not disclose the use of both a hardware circuit and software executing on a processing unit, at different times, to adjust the frequency difference between the program and local clocks.

Independent Claims 1, 3, 7 and 13 are being amended to emphasize the differences between the claims and digital circuit disclosed in Shiomoto, et al. In particular, these claims are being amended to change "processor" to "processing unit," and to include expressly the limitation that the clock recover software program executes on the processing unit. These changes clearly distinguish Claims 1, 3, 7 and 13 from the hardware mechanism disclosed in Shiomoto, et al.

In view of the differences between Claims 1, 3, 7 and 13 and the prior art, these claims are not anticipated by and are not obvious in view of the prior art. Accordingly, Claims 1, 3, 7 and 13 patentably distinguish over the prior art and are allowable. Claims 2, 16 and 17 are dependent from Claim 1 and are allowable therewith; and Claims 4 and 5 are dependent from, and are allowable with, Claim 3. Likewise, Claims 8, 9 and 10 are dependent from, and are allowable with, Claim 7; and Claims 14 and 15 are dependent from Claim 13 and are allowable therewith. The Examiner is, accordingly, requested to reconsider and to withdraw the rejection of Claims 1-5, 7-10 and 13-15 under 35 U.S.C. §102 and to allow these claims and new Claims 16 and 17.

For the reasons discussed above, the Examiner is asked to reconsider and to withdraw the objections to Claims 1, 2, 4, 5, 8-10, 14 and 15 and the rejection of Claims 1-5, 7-10 and 13-15 under 35 U.S.C. 102 and to allow Claims 1-5, 7-10 and 13-17. If the Examiner believes that a telephone conference with Applicant's Attorneys would be advantageous to the disposition of this case, the Examine is requested to telephone the undersigned.

Respectfully submitted,

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